Chair’s Note

Marc Banghart, Chair
Reliability Division of ASQ
marc@asqrd.org

I am pleased to announce that the ASQ Reliability Division has achieved a Silver PAR Innovation award for a project focused on leveraging social media to expand the division reach. A special thank you to all the volunteers that contributed to this project.

I am very excited to announce that the ASQ Board of Directors has approved a broader scope for the Reliability Division. Specifically, the Division will undergo a name change in the coming months to formally incorporate risk technical processes. Specifically, we will be known as the Reliability and Risk Division and continue to provide technical and educational resources as before. The addition of risk to the division title will expand the scope of the division concurrent with industry perspectives and allow the division to leverage appropriate technical expertise. This will allow the division to expand our current offerings and provide additional member value. Please stay tuned as the name change takes shape!

Thank you to all our members and volunteers for their continued support.

Marc
1. Checking account as of May 31, 2017: $26,303.90

2. As of May 31, 2017 Income over expenses $30,221.78 - $31,654.56 = $-1,432.88

1. Other funds/investments:

   Investing in ASQ: $32,397.21 (as of May 1, 2017)

   PNC investment account: $97,559.44 (as of Feb 28, 2017)

Other information:

   No resolution to why our Dues reimbursement for 2016 was $2000 less than any of the previous 5 years.

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**Sir Ronald Fisher**

British statistician and geneticist Sir Ronald Aylmer Fisher (February 17, 1890 – July 29, 1962) was a pioneer in modern statistical methods.

As Reliability Engineers we owe him a great debt for his work in developing techniques for the design and analysis of experiments, for his emphasis on planning an experiment, both in choosing the size of sample so as to enable worthwhile results to be achieved, and in determining the most appropriate tests. Fisher’s most important ideas of experimental design appeared in an article “Mathematics of a Lady Tasting Tea.”

In addition, his work in hypothesis testing and what we now call ANOVA or Analysis of Variance are invaluable to us. His classic book *Statistical Methods for Research Workers* (1925) was extremely influential in research (initially in agriculture and biology as he was the statistician with the Rothamsted Experimental Station in Great Britain). Several other well known contributions to Statistics and Reliability:

1. Fisher’s exact test — used in the analysis of significance in contingency tables. Said to have also come from the “Lady Tasting Tea” example/story.

2. Fisher-Tippett distribution — (also known as the Generalized Extreme Value distribution) was developed in 1928. The Type III Fisher-Tippett is better known as the Weibull distribution. It is generally thought that Waloddi Weibull was looking for an extreme value distribution in the late 1940’s and came across this equation form, and applied it with much success!!

3. Maximum Likelihood Estimation — which calculate the distributional parameter(s) that have the highest probability of explaining the data used.
Jan 1 through May 31, 2017 ASQRD Income

Income by Category

Jan 1 through May 31 ASQRD Expenses

Expenses by Category
A Revolution in Quality & Reliability Software Solutions

Relyence

Cloud-based or on-premise. Your Choice!
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FMEA

FRACAS

Reliability Prediction

Fault Tree

Building on today's technology innovations to meet the needs of the modern workplace, Relyence offers an all-new approach to quality and reliability analysis.

Check out our tools to see the Relyence difference. Our complete cloud solutions offer the unparalleled ease and security of the Microsoft Cloud. You simply log in with your web browser and get to work! Our on-premise solutions provide the same high-powered features and functions, with the ability to install locally if you choose.

With Relyence, you have any time, any place, any device flexibility. Built with the needs of today's collaborative workplace in mind, Relyence allows you the freedom to work however you choose, with the workflow you see fit. PC, laptop, tablet, smartphone – Relyence is designed for today's fast-paced, virtual workplace.

Take us for a free trial test run today! We're convinced you'll see the power awaiting you when you choose to join the Relyence revolution.

Check out our online trial today at www.relyence.com
There's nothing to install. Just sign up and you're in!
Building on a decade of ARS success, the new Applied Reliability and Durability Conference (ARDC) showcases a legacy of knowledge and success in reliability and durability engineering. ARDC events connect a worldwide community of thousands of engineers, offering a unique opportunity to leverage best practices and gain support from subject matter experts, thought leaders and fellow professionals.

Join the global reliability and durability conversation for an opportunity to build your professional support network. The year round ARDC live experience includes:

- All knowledge-rich papers and resources presented during the event
- An interactive platform to connect online anytime with fellow engineering professionals
- Collaboration and engagement throughout the event with interactive sessions and workshops
- Continued accreditations, qualifications and professional endorsements

Learn
Network
Achieve

Discuss current best practices and real-world solutions
Three tracks focusing on reliability, durability and maintainability offer a comprehensive and customizable schedule of presentations, tutorials, and discussion panels.

Network with industry professionals
Join peers, sponsors and exhibitors for great networking opportunities

Gain relevant takeaways with quantifiable results
Find cost-saving ideas and strategies from professionals across a wide range of industries

Register today to join the community!
www.ardconference.com
ReliaSoft Corporation continues its ongoing commitment to providing the leading solutions for reliability engineering, quality and maintenance planning needs of product manufacturers and equipment operators.

The Synthesis Platform applications now offer new functionality and more value through integration. Here is a short list of some of the exciting developments you can take advantage of by upgrading to Version 11:

- Weibull++ and ALTA offer full Design of Experiments capabilities
- Xfmea, RCM++ and RBI now allow you to create Parameter Diagrams (P-Diagrams), which provide a visual method for documenting input signals, noise factors and control factors that lead to ideal and undesirable system responses
- Siemens SN 29500 reliability prediction standard is now available in Lambda Predict
- The Synthesis Enterprise Portal (SEP) has a fresh new look with responsive design for better performance on mobile devices to access analyses without having the Synthesis applications installed
- Improved performance and updated interface for spreadsheets
- ALTA Stress Profiles and nCode Glyphworks integration to analyze time series data (*.S3T files)

For more information, visit our website at http://www.reliasoft.com or email us at sales@reliasoft.com
The 2017 Accelerated Stress Testing and Reliability (ASTR) Conference is focused on highlighting cutting-edge methods to deliver maximum cost-benefits from accelerated reliability testing. ASTR 2017 is relevant to product development, test and manufacturers involved in the aerospace, automotive, consumer electronics, defense, biomedical, telecommunications, software and other leading industries where reliability is a key driver of operational and business success. ASTR 2017 will present detailed case studies, best practices, lessons learned, and clear insight on how to best apply and integrate accelerated testing tools and methods.

Students welcome to present research.

The 2017 focus will include (but not limited to):

- The science of test acceleration: integration of design modeling, analysis and accelerated testing
- New Accelerated Test Standards in progress
- Effects of corrosion and high energy radiation on reliability
- Highly Accelerated Life Testing (HALT) and Highly Accelerated Stress Screening (HASS)
- Selecting Sample Size
- Developing life test plans

Become part of this active, growing conference sponsored by both the ASQ Reliability Division and the IEEE Reliability Society. The hotel has special rates for this conference.

*There are many reasons to attend this conference! Make this your fall destination.*

Don’t miss this conference. There will be speakers from many countries. Check the Website about June 20 for a tentative program.
RELIABILITY AND MAINTAINABILITY ENGINEERING: CONCEPTS & TOOLS
31ST OCTOBER 2017 | DUSIT THANI | DUBAI, UNITED ARAB EMIRATES

WHO SHOULD ATTEND:
Individuals looking to achieve CRE certification or others interested in an overview of reliability engineering topics.

LEARNING OBJECTIVES:
- Learn reliability and maintainability concepts
- Understand basic statistics related to reliability engineering (exponential, lognormal and Weibull)
- Relate reliability with six sigma and quality
- Construct Fault Trees and conduct a Failure Modes and Effects Analysis (FMEA)
- Analyze series and parallel systems
- Reliability prediction
- Apply 5S methodology for process improvement

List Price: $1,350 | Member Price: $1,050

REGISTER HERE: https://mcime.eventsair.com/asqmea/conftrreg

Rabia Radwan Muammar is a Continuous Improvement specialist with extensive experience working with all organizational levels in manufacturing and service fields. Rabia is passionate about creating an interactive and enjoyable business environment that supports quality improvement processes.

Rabia holds B.Sc. in Industrial Engineering specialized in Engineering Management in addition to six professional certifications; Six Sigma Black Belt CSSBB-ASQ, Reliability Engineering CRE-ASQ, Quality Engineer CQE-ASQ, Lean Six Sigma Black Belt, Quality Management System (ISO 9001) Auditor/ Lead Auditor, and certified Jordan Associate Engineer (JAE) in Industrial Engineering/ Quality.

EARN RU CREDITS
0.8 RU+ 2 RU

Offered in collaboration with the ASQ Reliability Division
Attend RAMS® 2018:
“RAMS® Throughout the Product Lifecycle”

RAMS® is the leading global conference for Reliability and Maintainability (R&M) professionals combining tutorials, presentations, CEUs, certifications, and networking into one week-long program.

RAMS® 2018 will bring together an international audience of R&M leaders and professionals, in-depth sessions and tutorials presented by top R&M experts, exhibit floor featuring leading companies, keynote session insights, networking and job related opportunities, and more.

5 Reasons to Attend:

1. Gain new insights into creating more efficient and effective reliability programs
2. Take actionable knowledge back to your organization
3. Make valuable contacts by networking with industry leaders and professionals
4. Gain new skills, CEUs and certifications that can advance your career including ASQ exams (CRE, CQE, and others) and continuing education courses offered both pre- and post-symposium by ASQ Reliability Division
5. Extend your stay and enjoy a fabulous family vacation at Reno Nevada, close to dozens of attractions

RAMS® is the leading global conference for Reliability and Maintainability (R&M) professionals combining tutorials, presentations, CEUs, certifications, and networking into one week-long program.

RAMS® 2018 will bring together an international audience of R&M leaders and professionals, in-depth sessions and tutorials presented by top R&M experts, exhibit floor featuring leading companies, keynote session insights, networking and job related opportunities, and more.

Special room rates for RAMS® 2018 attendees are available at The Silver Legacy Resort Casino 1-800-687-8733

Register at rams.org
Congratulations to our ASQRD members who were elected 2017 ASQ Fellows

**Eric Alden, Xerox Corp., Canandaigua, N.Y.** — For outstanding contributions in measurement, design of experiment and reliability modeling techniques; coaching in Six Sigma; developing and teaching workforce development courses; developing and sharing data analysis techniques using Pivot Table and statistical software; utilizing multivariate analysis to improve hospital board knowledge; and for leadership in the ASQ Rochester Section.

**Michael Hamada, Los Alamos National Lab, Los Alamos, N.M.** — For significant research contributions in the design and analysis of experiments, measurement system assessment and reliability; for leadership in interdisciplinary collaborations to improve the practice of science for national security; and for dedicated service to the practice of quality.

**James Miller, Roche, Muncie, Ind.** — For outstanding leadership in quality education activities in ASQ, at university and in business; for devoted section leadership; and for professional competence in quality management within the consumer electronics industry and medical diagnostics industry.

**Abbas Saghaei, Azad University, Tehran, Iran** — For effective training of students at universities and professionals across multiple industries; for implementing quality practices across many organizations that deliver quantifiable financial benefits; for outstanding contributions to the quality movement within Iran; and for significant research and publications at the national and international level.
<table>
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<tr>
<th><strong>CALL FOR PAPERS</strong></th>
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<tr>
<td><strong>$1000 Annual Award for Best RELIABILITY Paper</strong></td>
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<td>Continuing in 2017-2018, the ASQ Reliability Division will administer a $1000 annual award for the Best Reliability Paper published on <em>Quality Engineering</em>. To be eligible for the award, at least one of the authors of the paper must be a member of the ASQ Reliability Division at the time when their paper was published. The reliability focused papers appearing in the four issues from July 2017 to June 2018 will be considered. For more information, please contact Prof. Rong Pan at <a href="mailto:rong.pan@asu.edu">rong.pan@asu.edu</a>.</td>
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<td>Congratulations to Michael S. Hamada! His paper, “Bayesian Analysis of Step-Stress Accelerated Life Tests and Its Use in Planning”, published in the 2015 July issue of <em>Quality Engineering</em> (a special issue on reliability) won the fifth annual award of Best Reliability Paper. The ASQ Reliability Division presented an award plaque to Dr. Hamada at the 2017 RAMS conference, Orlando, Florida.</td>
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<td>To see all the best papers: <a href="http://www.asqrd.org/qe-best-paper-award/">http://www.asqrd.org/qe-best-paper-award/</a></td>
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<td>To submit papers for publication: <a href="http://mc.manuscriptcentral.com/lqen">http://mc.manuscriptcentral.com/lqen</a></td>
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Go to ASQRD.ORG>HOME>Our Blog

Updated from all our Social Media sources on a daily basis… one-stop shopping for Reliability news!!
ASQ Reliability Division

Call for Instructors

The Division is looking to expand its cadre of Reliability and Maintainability instructors! If you are interested in teaching and reside in the USA or Europe please send your resume and course abstract to our education chair, Trevor Craney at trevor.craney@shell.com. Instructors may be required to provide a short sample course via WebEx.

ASQ RD invites the interested professional to submit the proposed courses to ASQRD for RAMS 2017. Send the course Description to the ASQ RD education chair, Trevor Craney at trevor.craney@shell.com.

CRE Volunteers Needed

ASQ is seeking volunteers to help write example questions to be used for Certified Reliability Engineer (CRE) exam practice questions. You must be a member of ASQ and a CRE. You can not have participated in efforts related to the actual CRE Exam content and development within the past two years in order to keep actual and practice CRE efforts separate. You will be provided RUs for the hours contributed to the project as well as recognition of your contributions.

If you are interested in supporting this effort, please contact Donna Grunewald at dgrunewald@asq.org for more information.

Statistics Corner: Failure to run a factorial experiment randomized

Probably the most common occurrence in many instances.

You set up the experiment, but you found out it wasn’t run as you expected:

1. The (furnace) temperature was “too hard” to change between runs, so all the runs at the same temperature were run together.. after all, it was more efficient??
2. There wasn’t enough material to run the experiment (new material, extremely expensive material or processing) what do you do now?

Answer: 1) analyze the results as a SPLIT PLOT experiment., 2) Set up the experiment as a SPLIT PLOT before the experiment is run.

See Design and Analysis of Experiments, Doug Montgomery, 6th, 7th, or 8th ed, Chapter 14.

Note: Factors in the above examples are referred to by MINITAB as “hard to change.”
English webinars:
1. **Availability**, Jorge Romeu, June 8, 2017
2. **GD&T**, Luis Aguirre, July 13, 2017
3. **Communicating Reliability and Risk to Decision Makers**, JD Solomon, August 10, 2017
4. **Causal Learning**, Bob Stoddard, September 14, 2017

*English series webinars always run at the same time on the same day; 2nd Thursday of the month at noon EDT (Unless otherwise Instructed).*

**ASQ- Reliability Division Webinar Series**
Reliability division offers free Webinars in English, Spanish, and Chinese featuring leading international practitioners, academicians, and consultants. Enhance your reliability knowledge. For more information, click here: [http://asqrd.org/webinars/](http://asqrd.org/webinars/)
The ASQ Reliability Division Webinar Series remains popular. Since the Webinar and Short Course programs were first offered in November 2010, the Reliability Division has provided ~170 webinars providing nearly 15,000 hours of professional development to its members at no cost. The most recent topics included webinars on:
* Design and Analysis of Experiments in MINITAB, May 11, 2017
* Reliability Calculation for Dormant k-out-of-n Systems with Periodic Maintenance, April 13, 2017
* A Method of Space Radiation Environment Reliability Prediction (太空辐射环境下的可靠性预测方法) March 12, 2017

Chinese webinars:
1. **The Investigation of Physical Explanation for Proportional Hazard Model (PHM) for Typical Failure Mechanisms (从故障物理角度解释比例风险模型)**, June 11, 2017, 1:00-2:00 Beijing time.

**Webinar Outreach**

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<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
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<tbody>
<tr>
<td>Executive Producer &amp; Speaker Manager</td>
<td>David Auda</td>
<td><a href="mailto:davidauda@yahoo.com">davidauda@yahoo.com</a></td>
</tr>
<tr>
<td>Chinese Host</td>
<td>Frank Sun</td>
<td><a href="mailto:franksun99@yahoo.com">franksun99@yahoo.com</a></td>
</tr>
<tr>
<td>Wenwei Wang</td>
<td>China</td>
<td><a href="mailto:wendaiw@gmail.com">wendaiw@gmail.com</a></td>
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<tr>
<td>English Host</td>
<td>David Auda</td>
<td><a href="mailto:davidauda@yahoo.com">davidauda@yahoo.com</a></td>
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<td>Kiruthika Sundarajan</td>
<td><a href="mailto:kiru31@yahoo.com">kiru31@yahoo.com</a></td>
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<td></td>
<td>Susan Czyrny</td>
<td><a href="mailto:smczyrny@gmail.com">smczyrny@gmail.com</a></td>
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<td>Spanish Host</td>
<td>Norma Antunano</td>
<td><a href="mailto:normaantu@aol.com">normaantu@aol.com</a></td>
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<tr>
<td>Video Editor</td>
<td>Ward Baun</td>
<td><a href="mailto:wardbaun@gmail.com">wardbaun@gmail.com</a></td>
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<tr>
<td>Webinar Support</td>
<td>Elaheh Rabiei</td>
<td><a href="mailto:elirab@umd.edu">elirab@umd.edu</a></td>
</tr>
<tr>
<td></td>
<td>Frank Sun</td>
<td><a href="mailto:franksun99@yahoo.com">franksun99@yahoo.com</a></td>
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Other Information

**LINKS**

**ASQ-RD new website**
http://www.asqrd.org/
For up to the minute news and reminders of what's going on in the Reliability Division world.

**Tech Briefs**
http://www.linkedin.com/groups?about=&gid=3994573

**ASQ Reliability Division (1500+ members on LinkedIn)**
http://www.linkedin.com/groups?about=&gid=1875217

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**Upcoming Events**

Click on Reliability Calendar for a current calendar:
http://www.asqrd.org/

1. **RAMS:** url: www.rams.org (page 9)

2. **Accelerated Stress Testing & Reliability (ASTR)** url: www.ieee-astr.org (page 7)

3. **Reliability & Maintainability: Concepts and Tools,** October 31, Dubai (page 8)
   url: https://mcime.eventsair.com/asqmea/conftrreg/Site/Register

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**ASQ Learning Institute™ Training**

The ASQ Learning Institute™ provides you with career enhancing training to help you make an impact in your professional path and your organization. Take advantage of member pricing, and register for one of these upcoming courses. To register, click here or call 800-248-1946 and provide promo code MFGEM.

**Onsite Training**

Customize ASQ learning to meet your organization's unique needs and eliminate travel expenses with on-site training.

**Courses**

- Certified Quality Engineer Certification Preparation
- Failure Modes and Effects Analysis -- Design
- Failure Modes and Effects Analysis -- Process
- Lean Six Sigma Black Belt Training
- Lean Six Sigma Green Belt Training

International Courses

See ASQ courses offered outside of the United States and Canada.

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**CRE Exam Information and Facts**

**Current CRE statistics:**

The total number of CREs as of the March 2015 exam was 5,961. Local ASQ Sections and international organizations host exams all over the world. You will be asked to designate a preferred examination site on your application. If you are not a member of ASQ, please find the Section that is closest to your location. If you live in a country other than the United States, Canada or Mexico, international certification affiliates administer certification exams. Find an international certification exam location. ASQ will make every effort to accommodate your request. ASQ offers some translated certification exams.

The ASQ certification exam dates (by type of certification) is at:
http://prdweb.asq.org/certification/control/dates
ASQRD Membership Encompasses 67 Countries

ASQRD Membership by Country (May 1, 2017)

ASQRD Membership by Job Title (May 1, 2017)
The ASQ Reliability Division Regional Councilor effort continues to provide outreach and engagement at the local level, often interacting with local ASQ sections in other professional and educational gatherings. We recently added Regional Councilors in New Zealand (Deven Subramoney) and Canada (Hessam Khodabakhsh).

Since ASQ Regions are large (multi-state and entire countries), we welcome having more than one Regional Councilor per region to broaden our reach. If you are interested in serving, please contact Dan Burrows, our Regional Councilor Coordinator, at dan@asqrd.org and he will send you more information.

Up-to-date Regional Councilor information is at url: http://www.asqrd.org/home/asq-reliability-division-regional-councilor-roster/
Meet Some ASQRD Regional Councilors

Deven Subramoney: lives in Auckland, New Zealand and is the ASQRD Regional Councilor for New Zealand

After obtaining a diploma in electronics engineering he chose a vocational path for his professional development, which evolved into the field of Reliability. In its core was practical work on increasingly complex projects, supported by numerous professional courses in Reliability.

Deven’s reliability career started in 1988 working as a test technician for a defense company in South Africa spanning over a few years and later joining a large electronics group in South Africa. In 2005, he was offered a reliability role within a NZ company and immigrated. He has played a key role in facilitating reliability in several large companies in NZ by introducing and developing the reliability process, educating engineers (and Management) in reliability, and reliability culture. As a result of this influence, some of New Zealand’s largest manufacturers have state of the art reliability test facilities on-site.

Rong Pan

Rong currently lives in Phoenix, Arizona and is an Associate Professor of Industrial Engineering at Arizona State University and is the Regional Councilor for Region 7. He has a Bachelors degree in Materials Science and Engineering, and a Master and PhD in Industrial Engineering from Penn State University.

Rong has spent his career teaching and in researching various topics in quality and reliability engineering. He was at the University of Texas at El Paso before coming to ASU in 2006.

Rong has been helping ASQRD organize conferences, review reliability papers, and selecting the Best Reliability Paper for publication in ASQ’s Quality Engineering Journal. He also serves on the editorial boards of two ASQ publications: Journal of Quality Technology and Quality Engineering. In fact, he is the editor of the 2017 Reliability Engineering special issue of Quality Engineering.

Rong is also a member of IEEE Reliability Society and the Society of Reliability Engineers. He has published a number of papers on reliability and presented and provided training at local and national reliability and quality events.

For those ASQRD members who wish to volunteer a “little” (and get acquainted with other ASQ members in your Region):

We continue to recruit for Regional Councilors in regions that are not represented:
Region 2 - Western/Upstate New York & Northern Pennsylvania
Region 3 - New York City/New Jersey Metro
Region 7 - Southern California, Arizona, Southern Nevada
Region 14B - Arkansas, Oklahoma, North Central Texas
Region 15B - Alabama, Mississippi, eastern Louisiana
Global - Countries outside of the USA

We are also open to having multiple Regional Councilors for regions since the geographic areas are so large.
2016-2017 ASQ-RD Leadership Positions

**Elected Positions**

**Chair**  
Marc Banghart  
Marc@asqrd.org

**Chair-elect**  
Dan Burrows  
dan@asqrd.org

**Secretary**  
Dan Burrows (N. America)  
dan@asqrd.org

**Treasurer**  
Jim Breneman  
weibullman@gmail.com

**Past Chair**  
Trevor Craney  
tacrane@yahoo.com

**Appointed Positions**

**Division Audit Chair**  
Mark Durivage  
mdurivage@hotmail.com

**Fellows Nominations**  
Charlie Plotkin  
cplotkin@ford.com

**Membership Chair**  
Tim Gaens  
tim.gaens@gmail.com

**Membership Vice-Chair**  
Suprasad Amari  
suprasad.amari@gmail.com

**CRE Liaison**  
Marc Banghart  
Marc@asqrd.org

**Outreach**

**Newsletter Editors:**  
Jim Breneman  
weibullman@gmail.com

Mohammad Pourgol-Mohammad  
mpourgol@gmail.com

Social Media Moderator  
Tim Gaens  
tim.gaens@gmail.com

**ASQRD.ORG:**

**Project Manager**  
(Vacant)

**Webmaster Backup**  
Marc Banghart  
Marc@asqrd.org

**IT lead**  
(Open)

**Marketing—Constant Contact**  
Angleat Shelikoff  
adshelikoff@gmail.com

**Webinar Outreach:**  
(separately on page 13 of this newsletter)

**QE Best Paper Award Chair**  
Rong Pan  
rong.pan@asu.edu

**Appointed Positions (continued)**

**Nominating Chair**  
Trevor Craney  
tacrane@yahoo.com

**Education & Arrangements Chair**  
Trevor Craney  
tacrane@yahoo.com

**Regional Councilors Coordinator**  
Dan Burrows (N. America)  
dan@asqrd.org

**RAMS:**

**RAMS Board of Directors**  
Trevor Craney  
tacrane@yahoo.com

**RAMS Best Paper Award Chair**  
Julio Pulido  
juilo.e.pulido@gmail.com

**ASTR:**

**ASTR General Chair**  
Charles Recchia  
charles.recchia@ieee.org

**ASTR program Co-Chairs**  
Jim McLinn/Jim Breneman  
jmrel2@aol.com/  
weibullman@gmail.com

**ASTR Treasurer**  
John Bowles  
bowles@cse.sc.edu

**QE Best Paper Award Chair**  
Rong Pan  
rong.pan@asu.edu